most friendly relations between us, and develop the resources of this rich and important part of Western Africa. If the natives find that the Government continue to show an interest in their advancement, and in the opening out of a mutually profitable trade, I am quite certain the chiefs will meet us more than half-way, and believe that we are really in earnest as regards the future prosperity of their country. But if, on the contrary, we desert them now, at this season of success, the consequence will be—what every one must foresee—a want of confidence will be engendered; no belief will be given to our assertions; we shall be laughed at and derided; no encouragement given to our missionaries or merchants; possibly expulsion from the country, with robbery and violence. Nor can we be surprised should this sad state of things occur. But if we keep our word, and do not break faith with them, the happiest results may be anticipated. Cotton in abundance will be planted; coffee, the sugar-cane, indigo, &c., will yield its increase; while ivory, gum, palm oil, &c., will find their way to our trading establishments in large quantities. There must be a *certainty* of sale; otherwise the natives can neither afford to plant, nor will they be disposed to look upon us as otherwise than a mere body of adventurers come to make all they can and then decamp.

"A small steamer, with a naval officer duly authorised, will do more good in establishing confidence and in preserving order than all the trading-vessels of Europe.

"Very faithfully yours,

"A. F. EARDLEY WILMOT."

Mr. LAWSON (a gentleman of colour) said he had heard with pain of the brutalities which had been committed by some of his fellow countrymen. He had, however, always maintained and, he believed, should always adhere to the opinion that any European traveller might travel from the Cape of Good Hope to the Mediterranean, and from the Atlantic Ocean to the Red Sea, without being molested, provided he paid proper reverence to the religion of the country, and dealt with leniency and kindness towards the natives. As soon as the natives saw that the Europeans were not trying to take advantage of them they would join with them hand and heart.

---

4. *Papers relating to the recent Volcanic Eruptions in Santorin.*

(Communicated to Sir R. I. MURCHISON, by LORD CLARENDON and the Hon. Mr. ERSKINE, H.M. Minister at Athens.)

THE principal documents received by the Society relating to the recent volcanic eruptions are a series of letters from Dr. Schmidt, Director of the Royal Observatory at Athens, who had been despatched with three colleagues, on board the screw-steamer *Aphroessa*, to the island of Santorin, with a view to observe the phenomena. He states that the first trace of the revival of volcanic action in the crater-harbour of Santorin was perceived on the 26th of January. It occurred on the islet Nea Kameni, and consisted in the slow subsidence beneath the sea of the little settlement called Vulkano, situated on the south-eastern shore of the island. Nearly at the same time a new volcano began to rise on the island of Nea Kameni, a little to the south-west of Vulkano,

and at the southern foot of the old volcano. On the 13th of February, the new peak, consisting of great masses of lava and trachyte, had reached the height of about 55 mètres. Dense columns of vapour issued from it: not, however, from the summit, but from around the base, and the hissing and roaring of the steam-jets resembled the noises produced by a steam-engine. The sulphurous exhalations were not at first very powerful. The first great detonation took place about 10 o'clock in the evening of Feb. 12th, and was succeeded by a magnificent eruption of red-hot cinders. The columns of smoke and vapour were so dense on the 13th, that it was not possible to see what was going forward from the summit of Nea Kameni, at an altitude of 350 feet. Numerous fissures opened in the old crater during the course of these movements. About 11 o clock on Feb. 13th, whilst the new volcano was in the height of its activity, ejecting aqueous vapour with fearful roaring and hissing, Dr. Schmidt beheld, from the summit of Nea Kameni, a rock arise from the sea in the direction of Palaia Kameni, and in the midst of a whirlpool which had formed in the spot for a short time previous; it subsided again after the lapse of four minutes, and the sea appeared to boil around its margin. On the 14th a new island appeared near the same place. The phenomena so far appeared to Dr. Schmidt not to have the normal character which he had observed at Mount Vesuvius in 1855.

On the 16th of February, Dr. Schmidt reported that the volcanic forces had increased in intensity. The new volcano had become larger, and had covered about fifty houses of the little settlement. During the previous two days the new island between Nea and Palaia Kameni had grown larger, and a lofty column of white vapour continued to arise out of the boiling sea. On the 20th, before 10 A.M., occurred the first considerable and dangerous explosion of the new volcano. Dr. Schmidt happened, with his colleagues, to be on the summit of Nea Kameni when a fearful thundering eruption of stones and ashes began, which lasted from two to three minutes. Leaving their instruments behind them they fled to the N.W., seeking as far as they could to shelter themselves from the shower of red-hot stones. They were all more or less hurt and burnt. The steamer *Aphroessa* was struck heavily by a shower of stones; the deck was stove in, only one yard from the powder-magazine, and the engineer's cabin was set on fire. At the mole lay a vessel, which was instantly set on fire by the stones and her captain killed on the spot by a falling block. Many of the sailors of the *Aphroessa* were hurt; but only one, a petty officer, seriously wounded. After the explosion the steamer changed her anchorage,

and landed her powder for fear of further accidents. Two eruptions of cinders, on the grandest scale, occurred on the 21st. On the 22nd, the general features of the phenomenon were the increase of vapours, and the formation of upwards of one hundred waterspouts, which seemed to indicate the imminence of some more considerable event. Towards 3 o'clock a gigantic eruption of cinders and stones took place, accompanied by a noise as of thunder; the stones were dark grey in colour, and were ejected to a height of more than 1000 mètres. Others of less violence followed, and then an incessant roaring, rumbling, and thundering noise testified to power of the forces at work in the volcano and the new island. All approach to the region of the eruption was for the present out of the question, as stones had already been cast to a distance of 1000 mètres from the crater.

At the conclusion of the reading of these Papers, the PRESIDENT explained to the Meeting some drawings exhibited on the walls, which had been made from Dr. Schmidt's sketches, and which illustrated the position of the eruptions in the harbour of Santorin. He said that it was on record in history that the great central crater of the island was in a state of activity about two thousand years ago, and the probability was that it had been so before that time. The volcanic forces were quiescent for seven hundred years previous to the year 1650, when they again broke out. Another period of fifty or sixty years followed, until a fresh eruption took place in the year 1707, when the island of Nea Kameni was protruded from beneath the waters. A very complete account of the islands of Santorin and its neighbouring islets was published by Lieutenant Leycester in the 22nd volume of the Journal of the Society; it was, therefore, only proper that the event of a new eruption should be brought to the notice of the Society, and recorded in its publications. Lieutenant Leycester's paper was illustrated by an admirable map, constructed under the direction of Captain Graves; and subsequently all the geological phenomena had been well explained by Sir Charles Lyell. They had yet to learn how the present eruptions were to terminate. He regretted to hear from the last letter received from Mr. Erskine that the population of the island of Santorin, a most industrious people, were anxious to leave it, on account of the increasing violence of the eruptions, and the accompanying earthquakes and fissures in the ground. The President then called upon Captain Spratt, who had described the geological, antiquarian, and archæological characteristics of the adjacent island of Crete, and who, from his long surveys in the Grecian Archipelago, was well qualified to speak on the subject under consideration.

Captain SPRATT said his acquaintance with Santorin consisted only in what he had observed during very short visits. Though he had been long employed on the Levantine survey, he had not been connected officially with the survey of the island of Santorin. He had, however, visited it two or three times. Its appearance, on approaching it, represented a flattened cake, elevated above the sea, in its central part, about 800 or 900 feet. Viewed from the sea it had no remarkable feature, except near its southern end. At that point there was a mountain, an uplifted mass of limestone, of about double the general height of the island. The exterior face of the island was in general a gradual slope towards the sea, and was for the most part even and uniform, and free from deep furrows or ravines. The slope was entirely covered with

vineyards, so that, among the Greek islands, Santorin was throughout the summer the most verdant of them all. The contrast between this exterior and the interior or western face of the island had no parallel within his knowledge. Santorin was separated from a lesser island to the west by a narrow strait. The larger island was anciently called Thera. The other island was now called Therasia, and there was a tradition that it had been broken off from the larger one during an eruption within the historical period. There was also an earlier tradition that both rose from the sea as one island. Therasia was connected with the larger one by a submarine plateau, that gave a complete representation of a crater, combined with the great depth of the sea in the enclosed area, as it reached a profundity of more than 1200 feet. The three islands in its centre, which had formed the active part of the volcano within the historical period, were also connected with the main island by a submarine bank. This submarine plateau had two cones, which were supposed to have been cones of action at some period or other. Immediately on entering the crater-harbour of the island from the north-western side, every vestige of the beautiful verdure which fringed the exterior disappeared; the only appearance there being a circle of dark precipitous cliffs, varying from 300 to 900 feet in height, formed of the scoriæ and débris of volcanic eruptions, ashes and tufa. The length of the large island was about nine miles. The internal diameter was nearly four miles, and the greatest width nearly seven miles. Sombre and dark as were these cliffs surrounding the crater, the three little volcanic islands in the centre of the bay were still more so, being coal-black rugged masses of basaltic lava. The first in part arose in the second century before our era, 186 B.C., and received additions until the beginning of the first century A.D. This is now called the Palaia Kameni. The newest of them, Nea Kameni, the central and largest of the three, originated in the year 1707. The eruptions connected with the formation of these islands were sometimes somewhat tranquil, and at other times rather violent as at present. A Jesuit in Santorin had given a very minute account of an eruption that occurred in 1650, that is about half a century before the appearance of the Nea Kameni, in the sea at 3½ miles to the N.E. of Santorin, where there is now a shoal or bank, 60 feet below the surface, to indicate the spot, but with much deeper water all around it, and he related that the vibration was felt in Crete and in the islands of Nio and Zea, nearly 60 or 70 miles off. It was said that, in the snug little port of the island of Zea, a Turkish man-of-war was cast ashore, by the wave produced, and wrecked, such was the effect of the wave-movement that followed the rising of the submarine shoal, and the explosion that accompanied it. It was recorded also that at the island of Nio the wave rose to a height of sixty feet, throwing upon it much pumice, and washing high the steep sides of the island, and accumulating upon them a mass of the surface débris: very much like some of the sub-angular gravel-deposits found at the head of several of our estuaries. He considered that the phenomena connected with the upheaval of land and submarine areas, and the consequent effect of wave-movements, required more attention in the consideration of similar beds composed chiefly of superficial débris, and occurring within estuaries whose entrances were broad, but terminating in long and narrow creeks, with low and gradually rising shores as their confines. Further, in regard to the island of Santorin, as he had seen it stated in the newspapers that the inhabitants of that island generally lived in caverns burrowed within the soft deposits, he felt it necessary to say that such was not the case. The villages upon it were numerous and populous, and the houses were in general well built. In consequence of the extent of the cultivation and the vineyards, and their commerce, the inhabitants were wealthy, and therefore they could afford to build good houses, and to drink the very good wine they produced.

Mr. Cyril Graham said he had very little to add to the very lucid statement of Captain Spratt. He wished to call attention to the constant ebullitions which were taking place in the bay of Santorin. It had been the custom, when it was possible, to send our ships which were lying in the Mediterranean into the bay for a week or ten days, because the effect of the water on the copper sheathing—in consequence of the gases with which the water became impregnated—was the same as if they had been in dock and scraped. The population of the islands was about 16,000.

ADDITIONAL NOTICES.

(Printed by order of Council.)

1. *Additional Notes on Formosa.* By R. Swinhoe, Esq., F.R.G.S., H.B.M. Consul, Formosa.

Mr. Swinhoe has sent us the following notes of various excursions he has made in the island of Formosa, as supplement to his Paper published in the Journal, vol. xxxiv. p. 6 :—

"1. *North-East Formosa.*—At the end of May I again visited Sawo Bay by sea. On the way we looked into Kelung: the cave there was explored with lanterns. Soon after passing the high arched entrance it divides into galleries, which consist for the most part simply of fissures in the rocks. The longest gallery was explored to its end, its length being somewhat over 500 yards. The passage is in many parts very narrow, and in others very low. Towards the end, from the overhanging limestone rock, a few stalactites of various length depended, and a few stalagmites were supported by the floor. A few fragments of marine shells of modern species lay about. Two small leaf-nosed bats were captured: these and one larger species were all that were seen. A viper, dotted all over with oval white spots, was the other animal seen inside: it opposed the entrance of the party, and was fortunately killed before it could inflict any mischief. This exploration satisfactorily settled the fable of the subterranean connection between this cave and the one at Tamsuy.

"We walked over the greater part of the small island, in the harbour called Palm Island, so called on account of the small palms (*Phœnix sp.*) that grow on conspicuous parts of its hilly surface. The remains of the Spanish fort are still to be seen in the inner corner of this island. A long low wall in ruins and covered with vegetation encloses about three acres of land, and in a corner facing the inner harbour, on raised ground, stand the remains of the cavalier. The space within the walls is cultivated. On the highest hill of the same island there are left only a few stones of what was once a small fort commanding the entrance and to seaward. Bush Island, a little to seaward of Palm Island, presents a flat surface of sandstone, cut into squares in chessboard pattern, the lines being in places well furrowed and looking like the rails of a railway, and the square patches of sandstone being marked with wavy lines, showing the play of water on their faces. This sandstone makes excellent holystone for the decks of ships, and lies in horizontal layers of from half a foot in thickness: the furrows are caused by the wearing away of the softer stone, which occurs in vertical strata at intervals between the horizontal strata of the harder kind, thus cutting them up into polyhedrous patches. The flat portion of the island is nearly covered at high water, showing only some large blocks of dead raised coral and two mounds covered with bushes, whence the name *Bush*